

What is claimed is:

1. A near-hermetic power chip-on-board (P-COB) device comprising:
  - a substrate;
  - a semiconductor device disposed on said substrate, said semiconductor device
- 5 including a silicon nitride passivation upper layer; and
  - a sealant disposed directly on said silicon nitride layer.
2. The P-COB device according to claim 1, wherein said substrate is a polyimide PWB.
- 10 3. The P-COB device according to claim 1, wherein said substrate is a direct bond copper substrate.
4. The P-COB device according to claim 1, further comprising:
  - 15 a die attachment which attaches said semiconductor device to said substrate.
5. The P-COB device according to claim 1, wherein said sealant is formed of silicon carbide.
- 20 6. The P-COB device according to claim 5, wherein said silicon carbide is deposited at a thickness of approximately 4000 Angstroms.

7. The P-COB device according to claim 1, further comprising:  
an aluminum bond pad and aluminum wires disposed on said semiconductor  
device.

5 8. The P-COB device according to claim 7, further comprising:  
a conformal coating disposed on said sealant, said aluminum bond pad and  
said aluminum wires.

9. The P-COB device according to claim 8, further comprising:  
10 a protective cover disposed on said conformal coating.

10. The P-COB device according to claim 1, wherein said semiconductor  
device is a power MOSFET.

15 11. The P-COB device according to claim 8, wherein said conformal  
coating is less than 2 mils in thickness.

12. A near-hermetic device comprising:  
a substrate;  
20 an electronics package disposed on said substrate;  
a sealant disposed directly on a surface of said electronics package; and  
a conformal coating disposed on said sealant.

13. The near-hermetic device according to claim 12, further comprising:  
a protective cover disposed on said conformally-coated electronics package.

5        14. A power chip-on-board (P-COB) device comprising:  
a substrate;  
a semiconductor device disposed on said substrate, said semiconductor device  
including a silicon nitride passivation upper layer;  
a silicon carbide layer disposed directly on said silicon nitride layer; and  
10      a conformal coating disposed on said silicon carbide layer.

15. A method of manufacturing a near-hermetic power-chip-on-board (P-  
COB) device, comprising:

providing a substrate;  
15      attaching a semiconductor device to said substrate; and  
directly depositing a sealant over an upper passivation layer of silicon nitride  
of said semiconductor device.

16. The method according to claim 14, further comprising:  
20      disposing an aluminum bond pad and aluminum wires on said semiconductor  
device.

17. The method according to claim 16, further comprising:  
disposing a conformal coating on said sealant.

18. The method according to claim 17, further comprising:  
disposing a protective cover on said conformal coating.

19. The method according to claim 15, wherein said semiconductor device  
is a power MOSFET.

10 20. The method claim 15, wherein said substrate is a polyimide PWB.

21. The method according to claim 15, wherein said substrate is a direct  
bond copper substrate.

15 22. The method according to claim 15, further comprising:  
attaching said semiconductor device to said substrate using a die attachment.

23. The method according to claim 15, wherein said sealant is a silicon  
carbide.

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24. The method according to claim 23, wherein said silicon carbide is deposited to a thickness of approximately 4000 Angstroms.